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ABSTRACT

Researchers have studied both competence levels and competence motivation in children. Competence motivation is usually assessed in terms of children's spontaneous preferences for optimal cognitive challenge, but actual spontaneous preferences in free play have seldom been used to assess motivation. In fact, competence level and competence motivation are inseparable since motivation, as it relates to spontaneous preferences, must be assessed by comparison with measures of skill (competence) level. Three experiments assessed children's preferences and demonstrated how they and skill levels could be compared: The Development of Agent Use, The Development of Social-Role Concepts, and The Development of Agent Use and Role Concepts. Results showed that as age increased preschool children showed more preferences for tasks at lower levels than their highest possible skill levels. Reasons included (1) more freedom in choice of activities and content, (2) increasing complexity of free play, (3) use of play as escape or rest from school and other demands, and (4) competence to choose when to meet a challenge and tax one's skills and when to save one's energy and not meet challenges. It was concluded that caution is needed in assuming that children's competence motivation is reflected in spontaneous preference for optional optimal cognitive challenge. (Author/YLB)

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Competence Motivation and Children's Free-Play Preferences

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Abstract

Researchers have studied both competence levels and competence motivation in children. Competence motivation is usually assessed in terms of children's spontaneous preferences for optimal cognitive challenge, but actual spontaneous preferences in free play have seldom been used to assess motivation. In fact, competence level and competence motivation are inseparable since motivation, as it relates to spontaneous preferences, must be assessed by comparison with measures of skill (competence) level. Several studies were reviewed that demonstrated how skill levels and free-play preferences could be adequately compared. Results showed that as age increased preschool children showed more preferences for tasks at lower levels than their highest possible skill levels. Reasons for the developmental shift in preferences are discussed in terms of different views of play and competence. Caution is needed in assuming that children's competence motivation is reflected in a spontaneous preference for optimal cognitive challenge.

Competence Motivation and Children's Free-Play Preferences

Children, as they develop, can be expected to gain more and more competence in predicting, controlling, and using their environment. They will, for example, develop and use an understanding of means-end relations, social-role expectations, and the antecedents of various emotions. In investigating such development, some researchers have assessed children's competence in terms of the skills involved and consequently the skill level reached (see Fischer, in press; Goldberg, 1977; Harter, in press). In another vein, researchers have been more concerned with the motivational aspects of the development of competence (see Goldberg, 1977; Harter, 1974, 1975, 1978a; Hunt, 1965; White, 1959, 1960). In the first instance, a competent child is thought to be one who demonstrates some specific skill or a general pattern of skills that are at a level expected for the child's developmental period. In the second instance, a competent child is thought to be one who shows intrinsic motivation to gain competence. The first purpose of this paper is to argue that these two aspects--the skill level reached and the motivation for developing competence--are inseparable. An assessment of skill level is necessary to determine level of motivation.

In assessing children's competence motivation, most investigators have used White's (1959) theory of effectance motivation as a model (e.g., see Harter's, 1978a, systematic refinement of the basic theory). This approach to competence (or effectance) motivation has led to the use of the construct of optimal cognitive challenge in partially explaining the motivational process. A situation of optimal cognitive

challenge can be defined as an activity providing input to the person that makes the maximal demands on the person's capabilities of adapting to and integrating the new information into his or her present schemes or skills. Nevertheless, the input is not so demanding that the person fails to understand and master it in a reasonable length of time (see Harter, 1978a). When people are free to choose their activities, they should then choose tasks providing this challenge at the highest level of which they are capable, that is if they are highly motivated to gain competence. Tasks that they are presently trying to master or have just recently mastered should be most appropriate in providing the optimal level of challenge. A preference for these "optimally difficult" tasks should increase the probability of a person finding pleasure in the task (Harter, 1974), as well as successfully processing the maximum amount of information and thus gaining the most competence possible.

In White's (1959) original theory, he suggested that situations apt to reflect such preferences and motivation were those in which external constraints, goals, and reinforcements were at a minimum. One such situation was thought to be spontaneous free play. Children spend vast amounts of time playing. They play at making things happen, at language and social interactions, and at pretending. Since they spend so much time and effort playing, it would seem that play must have some important functions in children's development. White's explanation of the motivation for competence seems to account for much of children's free-play behavior, and researchers have assumed that through play children seek optimal cognitive challenges and thus mastery of their environments and emotions (e.g.,

Bruner, 1972; Ellis, 1973; Erikson, 1963; Millar, 1968). However, a second purpose of this paper is to argue that children's free-play preferences may not necessarily indicate their actual levels of competence motivation.

A major problem with many studies of competence motivation is that it is so difficult to operationally define. For example, typically a child's ability on several graded tasks (e.g., anagrams) is scored, and then the child is asked to express a preference for one of the tasks to determine if the child prefers the most difficult one that he or she was successful in completing (see Harter, 1974, 1975, 1978a, 1978b). In these studies, skill level is first assessed, and then preferences are assessed. Results indicate that children tend to prefer optimally difficult tasks in such limited choice situations. Such conclusions about motivation and preferences for challenge would be impossible without an independent assessment of skill level, but even with such an assessment a definition of high competence motivation is somewhat circular: Motivated children are those who prefer optimally difficult tasks, but preference for difficult tasks is virtually the sole defining criterion of competence motivation. Additional criterion-referenced validity is needed.

Regarding the possible function of free play as providing challenges, a more important problem in these studies is that the preferences are measured in a limited, forced-choice situation. An investigator cannot say that a child's preferences demonstrated any motivation or preference for optimal challenge in situations where the child was truly free to choose activities, i.e., in spontaneous free play.

In a different area of research--studies of the development of play--another major problem exists: No determination of actual skill level is available by which to assess preferences (e.g., Garvey, 1979; Nicolich, 1977). Typically, children are observed in free-play situations only, and the researchers must assume that what the child shows is what the child is capable of. In this case, free-choice preferences are assessed but without independent comparisons of actual competence in terms of the highest skill levels available to the child.

In both the studies of competence motivation and the studies of free play, information is lacking that would allow the investigators to actually determine if children do indeed prefer optimal cognitive challenges in free play. Admittedly, such information could contribute greatly to an understanding of a theory of competence motivation, but in any case the paradigm, based as it is on assessing optimal cognitive challenge, may lead only to a dead end, as I will attempt to illustrate.

Assessment of Skill Levels and Free-Play Preferences

To avoid loose or circular definitions of a child's optimal challenge, investigators should first seek an independent assessment of the child's skill or competence level and then observe the child's subsequent, spontaneous, non-forced preferences in a free-play situation. One possible technique that we have recently used is to require children to demonstrate some behavior at each step of a predicted developmental sequence in some skill domain and then score the behaviors as pass or fail for each step in the sequence (Watson & Fischer, 1977, in press). The tasks used for each step are similar to each other except for some controlled aspect of com-

plexity or difficulty that is systematically varied across the sequence (see Table 1).

To facilitate children's demonstrations of each task, an adult model first demonstrates the pretending task or story for each step. After the demonstration of each step, the model invites the child to demonstrate through imitative pretending his or her own task or story. Previous research has shown that children, in pretending, do not blindly mimic a model's behaviors but selectively imitate only those aspects that they understand, those behaviors that they can assimilate (Gottlieb, 1973; Harnick, 1978; McCall, Parke, & Kavanaugh, 1977; Watson & Fischer, 1977, in press). In addition, children use such modeling as a cue to perform behaviors beyond those specifically demonstrated. This method of modeling and imitation does not provide assessments of children's free play, but it, nevertheless, provides assessments of their skills and understanding. In fact, in one domain--that of language acquisition--imitation may fall behind spontaneous production, depending on the task difficulty (see Bloom, Lighbown, & Hood, 1975; Bloom, Rocissano, & Hood, 1976). The main point is that imitation is not necessarily ahead of or behind spontaneous production or comprehension. It is simply another task requiring understanding.

With access to these independent assessments of each step in a predicted sequence, we then use scalogram analysis for cross-sectional data to verify the order of the steps in the sequence (Green, 1956; Fischer, Note 1). If we find that the steps are truly sequential, we then have a measure of each child's highest level in the sequence since each child performs on each task (either pass or fail).

In order to subsequently assess preferences in free play, we have chosen tasks that seem to be of interest to normal preschoolers. The tasks chosen involve representational and role-play skills. Of course, any one sequence can be used to assess skill level only in the context of the specific tasks (e.g., role playing using doctor, patient, and nurse dolls allows assessment of skill level in only one area of role-concept development). Obviously, a child's skill level in one domain and under one set of circumstances cannot be generalized automatically to other domains, but no study has been able to support such generalizations for skill levels or motivational levels in children. Nevertheless, such sequences make possible some valid assessment of skill levels.

Subsequent to the assessment of skill levels, we observe the children in free play and assess which steps from the previous sequence they spontaneously demonstrate. In this phase they are given no reinforcement or suggestions as to what to perform. In this manner we have both a systematic and independent assessment of their actual skill levels and an assessment of their free-play preferences (if any) in the same skill domain. If they prefer an optimal cognitive challenge in that domain, they should choose to perform in free play the highest steps that they had previously demonstrated in elicited imitative pretending.

The Studies

In three experiments, related tasks were used as discussed above to assess children's preferences.

Experiment 1--The Development of Agent Use

First, we assessed the representational skills of 36 children, 14, 19, and 24 months of age, in using agents of action in early pretending (Watson & Fischer, 1977). (Table 1 gives the combined sequence of all steps

that we predicted in the three studies. The first four steps were tested in Study 1.) As can be seen in Table 1, we predicted that children's use of agents or sources of action in their imitative pretending would develop from (1) using only the self as an agent of action to (2) using another agent (e.g., a doll) as a passive recipeint of action to (3) substituting a nondescript object for an agent to (4) eventually using another agent as an active, independent initiator of actions.

Insert Table 1 about here

As in all the studies, each child was tested individually, and the order of steps modeled was counterbalanced. After observing a model demonstrate all steps in the sequence, each child was allowed to play freely. In this first study, we did not obtain an assessment of children's skill levels independent of their free-play preferences, and this deficiency reduces the strength of the results.

Under no pressure to imitate, 32 of 36 children nevertheless fit the sequence perfectly and demonstrated that the sequence was scalable (Green's Index of Consistency = .58) and age related. More importantly, as age increased, children omitted earlier steps while demonstrating increasingly higher steps (Watson & Fischer, 1977). These results indicated that very young children did indeed seem to prefer challenging tasks when they were allowed spontaneous preferences. The children could, of course, demonstrate a wide range of behaviors besides pretend play involving agent use, but all but eight children picked up on the modeling cues and exhibited pretend play with various agents. The children did not indiscrimi-

nantly or randomly imitate or choose their free-play activities but seemed to prefer tasks at an optimal level of mastery rather than easier tasks.

In a study by Harnick (1978), infants from 14 to 28 months of age were also found to discriminantly imitate behaviors on tasks that seemed to be of moderate difficulty rather than being too easy or too difficult for them. As age increased, the infants chose behaviors modeled in increasingly difficult tasks. Although this study did not assess true free play, it also lends support to the hypothesis that children prefer tasks providing an optimal challenge, tasks at the level of their highest mastery.

Experiment 2--The Development of Social-Role Concepts

In view of the results of the first study, we completed a second study to test the development of a sequence of social role understanding that seemed to be based on the previous development of independent agent use (Watson & Fischer, in press). The major hypothesis was that preschool children in their elicited imitation would demonstrate a scalable, developmental sequence and in free play would choose to demonstrate only the highest steps that they were capable of as already measured in elicited imitation.

Steps 4 through 9, as shown in Table 1, were assessed in this experiment. Step 4, active other agent, was the last step of the previous study. Before children can role play, they must possess an understanding of agents who can be independent from themselves. Step 5, behavioral role, is a compounding of several behaviors which are associated to form

a particular role or category of people (e.g., a medical doctor does certain things that are eventually recognized and associated with the doctor role by young children).

Step 6, social role, requires a new combination of relating one role, with its attendant behaviors, to another complementary role, with its attendant behaviors, so that one role is determined by the expectations and behaviors of the complement (see Deutsch & Krauss, 1965). The roles now become truly social. Step 7 is simply an expansion of the complementary relations begun in the previous step. Step 8, intersection of social roles, is a new combination of two roles for the same agent related to the respective complementary social roles of another agent (see Chambers & Tavuchis, 1976; Sigel, Saltz, & Roskind, 1967). Now a person can be in two roles simultaneously (e.g., father and doctor) and can coordinate the expectations from the complementary roles (e.g., daughter and patient). Step 9 is simply an expansion of the role intersections that were begun in the previous step.

Of course an understanding of roles develops beyond this sequence and in other ways not included here, but this sequence represents the basic structural changes in role relations that children must deal with to gain an adult level of competence in their real-world social relations. One would expect, then, children to include in their pretend play some practice of these role relations in order to gain mastery of them. In preliminary, naturalistic observations, we did observe play similar to all these steps.

We assessed the skills of 68 children, not used in the previous study, who were divided into five age groups with mean ages of 1½, 3,

4½, 6, and 7½ years. The modeling and imitation procedure was used as discussed previously and was followed by a period of free play in which the child was allowed to play at any activity with no constraints or requests from the experimenter. Thus, in this study we obtained independent assessments of both skill levels and free-play preferences.

The six-step sequence (Steps 4-9) was found to be highly scalable (Index of Consistency = .89), and 65 of 68 children fit the sequence perfectly. In addition, as age increased, there was a significant increase in highest step demonstrated. Also, age correlated .76 with highest step reached. To summarize, by 2 years of age most children could use agents independently; by 3 years of age most children could use behavioral roles; by 4 years many children could use social roles; and by 6 years many children could use role intersections. Thus, we had a developmentally sequential series of steps to use as a basis for comparing subsequent free-play preferences (Watson & Fischer, in press).

Based on the results of Experiment 1 and the assumptions already discussed, we predicted that the children in free play would choose to perform the highest one or two steps that they had previously demonstrated and would omit easier steps. This pattern was true for the younger children who demonstrated Steps 4 or 5 only. (In free play the sequence was not scalable because of the many children who omitted easier steps.) However, at around 4½ years of age and with the onset of Step 6 (social role), children began dropping back in free-play preferences to easier tasks than their highest levels. There was no significant difference between highest step shown in elicited imitation and free play for children 4½ years and younger, but there was a significant difference for

6-year-olds (see Table 2).

Insert Table 2 about here

From these results a methodological question arises: Is the shift in free-play preference patterns truly developmental or merely an artifact of the testing procedure? Perhaps the highest steps were so atypical of normal play that no child would use them in free play. This explanation does not seem valid because all steps, including step 6 (social role) where the shift to lower preferences began, were based on role-playing behaviors typically observed in children. When Step 6, for example, was not the highest step possible for a child but was an easier step, it was usually not omitted in free play as it was when it was the highest step possible. In fact, each step was demonstrated by some children in free play. Simply put, the level of steps that children preferred increased with role-playing skills, but the preferences dropped precipitously at Step 6 and thereafter did not keep pace with assessed skill levels.

At least one other study supports the finding of preferences for only moderate skill levels. Although Harter had originally postulated a linear relation between tasks providing optimal challenge and provision of pleasure, as well as level of preference, for the child, she subsequently extended the linear model to a curvilinear model, in which the most difficult tasks that a child could solve may not be preferred because of the extensive time and effort required for solving them (Harter, 1978a). In a study involving anagram problems, Harter (1978b) found a

curvilinear relationship between smiling and difficulty level. Although her study did not deal with free-play preferences, it provides support for the findings concerning shifts in role-play preferences.

Experiment 3--The development of Agent Use and Role Concepts

Another statistical artifact may have invalidated the results: Perhaps the younger children seemed to prefer their highest skill levels only because the task was a forced-choice task afterall. Since they had so few steps mastered and available for their use, they had relatively fewer choices than the older children who had mastered several more steps in the sequence. This situation would create a floor effect that would inhibit the younger children from demonstrating lower preferences. Instead of asking why the developmental shift occurs, perhaps one should ask why the younger children don't show lower preferences as the older children had done. This line of reasoning necessitates a change from the original assumptions about children preferring optimally difficult tasks to children generally not preferring optimal challenges.

In a third Experiment, the agent-use sequence and the role-playing sequence were combined and tested in children 1½ to 4 years of age to determine if any floor effects inhibited the younger children from dropping back in preferences. By adding the lower steps of agent use to the higher steps of role play, we attempted to give the younger children more choices of steps below their highest levels.

In this experiment, Steps 1 through 6 were tested (see Table 1). The same method of assessing skill level by modeling and eliciting imitative pretending of each step was used, and then free-play preferences were again observed. Subjects were 40 children not used in the previous

studies. There were an equal number in each of four age groups, with respective mean ages of 1¼, 2, 3, and 4 years (Watson & Fischer, in press).

Again, the sequence was found to be highly scalable (Index of Consistency = .87), and 38 of 40 children fit the sequence perfectly. As age increased, there was a significant increase in highest step demonstrated (Watson & Fischer, in press).

In free play, the sequence was not scalable because of the number of children who omitted easy steps. Nevertheless, the correlation of highest step demonstrated in elicited imitation and in free play was extremely high $r(38)=.94$, $p<.001$. The only drop in free-play preferences from highest step was at Step 6, the last step assessed. Only five children did not play at their highest step in free play, and four of them had Step 6 as their highest step.

These results indicate that the shift in preference starting at Step 6 (social role) was not due to a floor effect. This study also replicates and integrates the sequences of the previous studies and shows that less advanced children do indeed prefer their highest levels while more advanced children do not.

Discussion

Although these studies are limited to only a few aspects of a vast range of play behaviors and developmental domains, they provide an example of how free-play preferences can be assessed. To define level of spontaneous preferences in terms of optimal cognitive challenge is simply impossible without an independent assessment of a child's skill level to use as a comparison. Otherwise, the concept of optimal cognitive challenge becomes meaningless. Because an assessment of activity preferences

is based on skill (or competence) level, competence motivation in terms of preferences is not separate from an assessment of competence level. The two together should define competence in children.

Another deficiency of past studies of motivation has been the lack of assessment of preferences in free play, in which the choices are not limited to a few constrained tasks. Only with observation of spontaneous, non-constrained behavior can White's original theory be further tested and refined.

Preference for Challenge and Competence Motivation

Together these studies indicate that not all children demonstrate spontaneous preferences in free play for the highest skill levels available in their repertoires. One explanation for this lag in preferences behind highest skill levels is that older preschool children simply do not prefer tasks providing them with an optimal cognitive challenge, contrary to White's and others' suggestions. But this lag in preference does not necessarily demonstrate a lack of competence motivation. There are several related reasons why children may not prefer optimally challenging tasks and nevertheless be strongly motivated to develop competence.

First, with the continuing development of representation skills in the late preschool years, children seem to develop the ability to intercoordinate two representations (e.g., the two roles coordinated in Step 6 to form social roles). This ability allows the child greater use of representation and greater freedom; the child has more degrees of freedom in the choice of activities and content (see Fischer, in press). The older children were not tied to the specific stories, dolls, and objects used in the modeling, and they thus showed more variation.

Second, the age changes in preferences may reflect the increasing complexity of free play itself. Based on the increased freedom in representations, as age increases children's spontaneous pretending may be used more and more for working out conflict and points of confusion in their immediate social environment that have little to do with mastery of the complexities that a particular researcher is interested in. In our studies, children's preferences for challenge may have existed still, but dynamic and affective concerns may have been more compelling for the older children than the role relations that we were trying to assess. One child, for example, clearly showed the ability to understand role intersections but in free play used only behavioral roles. Yet, her stories consisted of complex chains of behaviors concerning child birth. Upon later questioning, she mentioned that she was excited about a neighbor who was going to the hospital to have a baby. She may well have preferred an optimal challenge in her concern with child birth but certainly not in the structure of role relations. In play a child may drop back to already mastered tasks at one level in order to shift focus to challenges in some other content area at another level. In other words, in any particular study, the researcher may not be tapping the area of interest to the child at that time. Assessing the area of challenge becomes a much more difficult task as children get older and have more freedom to choose their behaviors. This problem again illustrates why children's forced choices of preselected and limited alternatives are not valid measures of actual preferences.

Third, because of changes in the functions of play, older children may simply not prefer challenges or seek mastery in free-play situations where they previously did as younger children. Play may be used more and more

as an escape or rest from the demands placed upon them in school and other situations. Erikson (1963), for example, discussed such changing functions of play as people get older. In fact, many adults seem to recognize that little adult play is used for mastery attempts. Rather, the escape function seems to increase with age. Many researchers think that even for children there are times that they prefer to process familiar and already comprehensible information or tasks rather than tasks that test the limits of their capabilities (Flavell, 1977).

A fourth reason provides a synthesis of the reasons discussed already. A high level of competence seems to include an efficient choice of when to meet a challenge and tax one's skills and when to save one's energy and allow challenges to go unmet. It does not seem especially adaptive for an individual to always process information and act in a way that requires a maximum output of energy and effort. Competence may require picking and choosing between difficult tasks. The development of the ability to choose and the development of play as an escape may allow such competence to increase.

In several studies of competence motivation and perceived competence, variation was found in what was defined as optimal challenge (Harter, 1975), and children were found to show simultaneously different levels of competence in different skill domains (Harter, 1978a, in press; Minton, Note 2). In describing the changes in cognitive skills in adulthood, Labouvie-Vief (Note 3) concluded that adaptation by its very nature involves a trade-off of specialized adaptation in one context at the expense of failure to adapt in another. True competence, then, requires some degree of specialization and certainly a freedom from every little situational demand that

arises. As Sroufe (1979) has argued, only by viewing a child's total functioning can investigators assess the child's adaptability and coherence.

The concluding point of this discussion is that a preference for optimal cognitive challenge may not be an adequate or useful reflection (i.e., operational definition) of competence motivation, even when it is adequately assessed, especially in older preschoolers. Competence motivation may or may not include preferences for challenge in any particular task, and it seems highly unlikely that any researcher could control a child's entire repertoire to the extent necessary to know if the child preferred an optimal challenge. While this conclusion seems laced with pessimism, this problem nevertheless exists. In any case, a slight shift in our view of what competence is, in relation to competence motivation, could lead to a greater understanding of its development.

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Table 1

Combined Sequence of Agent Use and Social Role Concepts in Experiments 1 through 3

Step	Skill	Modeled Behavior
1.	Self as Agent	Experimenter pretends to drink from an empty cup.
2.	Passive Other Agent	Experimenter feeds doll with cup.
3.	Passive Substitute Agent	Experimenter feeds block that is substituted for a person or doll.
4.	Active Other Agent	Experimenter pretends that a doll picks up cup and drinks as if it were actually carrying out the action.
5.	Behavioral Role	Experimenter pretends that a doctor-doll uses a thermometer and otolaryngoscope and thus acts as a doctor.
6.	Social Role	Experimenter pretends that a doctor-doll interacts with and examines a patient-doll who is sick.
7.	Social Role with Two Complementary Roles	Experimenter pretends that a doctor-doll appropriately interacts with a patient-doll and a nurse-doll. All dolls respond appropriately to each other.

8.	Intersection of Social Roles	Experimenter pretends that a doll is simultaneously both a doctor and a father for another doll who is simultaneously both his patient and daughter. Both dolls respond appropriately in their roles.
9.	Intersection of Social Roles with Multiple Complementary Roles	Experimenter pretends that a doll is simultaneously a doctor, father, and husband for one doll who is his patient and daughter and for another doll who is the patient's mother and the doctor's wife. All dolls respond appropriately in all roles.

Note: For details of sequence, see Watson & Fischer (1977, in press).

Table 2

Mean Highest Step Demonstrated by Children

at each Age in Experiment 2

Condition	Age (in years)				
	1½	3	4½	6	7½
Assessment	3.5	4.9	5.9	7.2	9.0
Free Play	3.5	4.8	5.6	6.0	7.2